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The "Billion Pengő Plan," officially known as the Five-Year Plan of 1938, was primarily a result of military considerations. Originally calling for an investment of one billion pengős, it was repeatedly revised upward until it reached 4.5 billion by 1943. Roughly three-fifths of the total funds were devoted to rearmament and to the heavy industries, while transportation and agriculture received one-fifth each. The plan was financed by a progressive capital levy and by government borrowing. It was carried out through the existing ministries by simply expanding their activities. A Ten-Year Plan for Agriculture calling for the investment of 100 million pengős annually was launched in 1942, but wartime dislocations prevented its realization.

By the spring of 1944 the power, aluminum, chemical, and oil industries had been considerably enlarged. The total Hungarian refining capacity was estimated as 3.5 million barrels annually before the territorial losses of 1920; as 1.5 million barrels in 1920; and was 3.2 million barrels in 1940. In contrast to this relatively modest development, by the spring of 1944, the total capacity had increased to more than 10 million barrels, only 710,000 of which were from refineries located in the temporarily recovered areas. The new plants at Pét and Szöny, which were built by the government within the framework of the Five-Year Plan of 1938, had a combined capacity of 3.6 million barrels; these plants alone considerably exceeded the total 1940 capacity.

During World War II numerous concessions were granted to German and Italian as well as domestic oil companies in the areas east of the Danube and in the recovered areas. These groups carried out extensive geophysical surveying and a few test wells were drilled. However, it was only in the Mura district, close to the Hungarian Zala fields that commercial discoveries were made. Small-scale production began in 1943. Two years later, in 1945, Yugoslavia recovered the district once more.

At the end of World War II the economy was once more at a standstill. In 1945 agricultural production did not reach one half of prewar production, while industrial output was only a fraction of that of 1938. Of 4,341 factories

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basic factors would have made some postwar government planning imperative under any government. There was the urgency for the reconstruction of the badly damaged and dislocated economy; the required prompt delivery of large quantities of reparations goods to the Soviet Union, Yugoslavia, and Czechoslovakia under the terms of the peace treaty; radical economic changes due to the elimination of Germany as a trade partner and the emergence of the Soviet-Hungarian mixed companies; and the industrialization of the country as already envisaged by the prewar governments.

The communists, of course, desired and proposed state planning along their own lines, to fulfill the above conditions, their ultimate political and economic objectives being the transformation of Hungary into a "socialist state on its way to communism" and the integration of the Hungarian economy into that of Soviet Russia. Having nationalized the basic industries, having eliminated the domestic "capitalist" class, having destroyed all Western confidence in Hungary's credit, and having rejected participation in the Marshall Plan, the Hungarian government had to embark on large-scale planning of its own.

The Three-Year Plan of 1947

The relative position of the Hungarian oil industry can only be evaluated in context with the over-all economic picture, which was drastically affected by postwar state plans. Accordingly, while the oil industry was not of paramount importance, and while much pertinent and accurate data relating to the oil segment of the economy is not available, the main features, objectives and achievements of the Three-Year Plan must still be outlined.

The Three-Year Plan of 1947 was the result of plans submitted to Parliament in the fall of 1946 and in early 1947. Formally accepted in July and launched in August of 1947, it aimed at raising the national income 14 percent above prewar but still below that of 1943. It

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While mechanization in agriculture progressed, 211 241
new tractor stations being set up and 4,500 tractors added 407
to an existing stock of 12,500, the plan fell short of its goal 433
in the agricultural sector, with the exception of livestock 185
which reached the prewar level. Crop production in 1949
reached only 77 percent of prewar, a near disaster.

In mining and metallurgy the plan aimed at 38 per- 316
cent above the prewar level. It called for an output valued 327
at 1.5 billion forints compared with 1.2 billion in 1938 and 328
an estimated 2.0 billion in 1943/44. In 1949 Hungary pro- 433
duced 11,844,000 tons of coal and lignite, 293,000 tons of iron ore, 428,000 tons of pig iron, 850,000 tons of steel, 561,000 tons of bauxite, 17,000 tons of aluminum, 45,000 tons of manganese ore concentrates, and smaller amounts of copper and lead ores. With the exception of oil and a few other smaller items the plan was reached or surpassed.

The output of power ran about 20 percent ahead of 377
the plan and reached 2.36 billion kilowatt-hours in 1949 433
compared with 1.4 and 2.1 billion kilowatt-hours in 1938 and 1943 respectively.

The gross output of manufacturing, excluding elec- 185
tricity, was to be more than doubled to a level of 16.5 bil- 433
lion forints in 1949. While it was officially claimed that the plan was overfulfilled by 21 percent, which would put the value of the 1949 manufacturing output (including electricity) at 20.8 billion forints, this claim is definitely too high and should be revised downward, to perhaps 14 billion forints or about 1.2 billion dollars.

With the exception of the leather industry it was claimed that the output of all others exceeded the 1938 level by margins ranging from 12 percent in textiles to 112 percent in engineering in 1949. Nothing was said of the refining industry. A drastic shift to investment materials [454]
at the expense of consumer goods is apparent.

Prior to the end of World War II Hungarian indus- 382●
try had used relatively large quantities of fuel oil. Reconstruction and expansion during the plan period suggest

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382 that industrial demand for oil reached at least the wartime peak, and very probably exceeded it.

185 382 497 In transport the plan called for the restoration of prewar capacity with a few improvements added and imposed no insatiable demands on the oil industry. No dieselization of locomotives had been carried out before the war, and none was scheduled by the plan. In 1948 the Hungarian National Railroads used only 1,740 tons of oil, compared with 1,584,000 tons of coal and 33.24 million kilowatt-hours of electric energy.

398 In the final plan report it was mentioned that there were "fewer" passenger cars in 1949 than the 18,900 listed in 1938. The number of buses, however, increased 50 percent from 700 in 1938 to presumably 1,050 in 1949. According to similar calculations, there were 9,500 trucks in 1949 compared with 3,800 in 1938.

362 374 As no appreciable quantities of oil were used for the heating of private homes the 120,000 cottages built in rural areas during the plan period had no effect on oil consumption; and the total number of new apartments built in two and a half years in urban areas was only 5,200 compared with the prewar average of 10,000 annually.

464 [316] Employment in mining and manufacturing (excluding handicraft) rose from 330,000 in 1938 to 443,000 by the end of 1949 but was still below the 1943 level of 470,000. Of the 1949 figure mining accounted for about 75,000 as [489] compared with 49,000 in 1938. There were very marked [331] increases in the transportation and building industries, each employing about 120,000 persons.

241 Despite the impressive increase in industrial strength in the years 1938-1949, Hungary remained an essentially agrarian country. Agriculture remained by far the most important single industry, employing an estimated 1,960,000 persons, or 46.4 percent of the working population.

000 Operations in the oil fields had been little disturbed

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Operations in the oil fields had been little disturbed 315 433
by the war, and in the immediate postwar period production was maintained at a relatively high level. The 1945 crude production of 656,000 tons (4,990,000 barrels) and the 1946 output of 675,000 tons (5,130,000 barrels) was exceeded only during the peak war years, and represented one of the few bright spots in the otherwise rather bleak economic picture. However, neither the owners of MAORT nor the Hungarian economy benefited very much from this production. In 1945-1946, the bulk of the crude went to [439] the Red Army without payment, while in the following years, 1946-1948, much went to the Soviet Union and neighboring satellites as forced exports or as reparations. During [435] this period the crude had to be delivered to the government at arbitrarily fixed prices.

In the spring of 1948, paralleling the second wave [471] of nationalization, the directors of MAORT were tried for [487] sabotage of the Three-Year Plan, and soon after the company was confiscated. Subsequently, MAORT was sub- [473] divided into several "National Enterprises." Crude production fell to 569,000 tons (4,324,000 barrels) in 1947 and fluctuated between 475,000 and 500,000 tons (3,610,000 and 3,800,000 barrels) during the following three years. As noted above, the targets set in the Three-Year Plan were not reached, and by 1949 the persistent crisis in the oil industry became one of the planners' major problems.

The old Zala fields were nearing depletion and could no longer continue the forced production records of wartime, while the expected new discoveries did not materialize. An acute shortage of drilling equipment, lack of skilled labor, and successive purges of management materially contributed to this failure.

In eastern Hungary, the German-held MANAT con- 315 473
cession was handed over to Soviet ownership. A Soviet-Hungarian Oil Company, Maszovol, was organized in 1946. Extensive oil explorations were carried out but no commercial oil discoveries were made until the end of 1949.

Hungary's refineries, unlike her oil fields, were 382 ● 433
very severely damaged during the war. Refining capacity,

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433 which was rated at 1,300,000 tons (10 million barrels) in 1944 plummeted to less than 100,000 tons (760,000 barrels) one year later. Reconstruction was slow at first, but gained momentum. Total existing capacity was estimated as 824,000 tons (6.36 million barrels) in 1947; 1,200,000 tons (9.1 million barrels) in 1948; and 1,600,000 tons (12.2 million barrels) in 1949. It should be noted that most Hungarian refineries built in the 1930's were equipped only for fractional distillation, and this condition remained virtually unchanged in 1947, as the more recently built large and modern plants were the ones most severely damaged during the war. It would appear that the planners counted on both increasing domestic production and large-scale imports of Romanian crude, but these assumptions failed to materialize. As a result, until at least 1948 the refineries operated at less than 50 percent of theoretical capacity. (See Table V.)[1] There are numerous reports stating that, beginning in 1949, large quantities of Austrian crude were being refined in Hungary.

185 The Three-Year Plan as a whole was ambitious but not unrealistic. It seems to have fulfilled its aim in reaching 110 to 120 percent of the 1938 production, an achievement due primarily to a forced production drive rather than to the government's investment program, the results of which could not yet be felt.

454 The investment program itself concentrated on the heavy industries, neglecting consumer goods production and agriculture.

Actual investments, adjusted for inflation, amounted to 8.3 billion forints, about 700 million dollars and exceeded the plan by 25 percent. In 1949 investment absorbed 18.7 percent of the national income to which an additional 5.3 percent must be added for inventory increase. Thus the total is 24 percent, an astonishingly high figure.

434 The true national income (reduced from exaggerated propaganda claims) appears to have been 17.4 billion forints in 1947/48 or 81 percent of prewar, and 25.5 billion forints (2.17 billion dollars) or 118 percent of prewar in 1949. This was still about 15 percent below the 1943 figure.

[1] [Cf. p. 87, category 116 -- Analyst]

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6 billion or 21 percent in 1950; and 8.75 billion or 24.5 percent in 1951. To these investment figures very considerable inventory increases must be added, without which the constantly accelerating expansion program would be impossible. Inventory increases absorbed an additional 4 to 5 percent of the national income or about 0.85 billion forints in 1947/48 and perhaps as much as 1.7 billion in 1951, also figured in constant January 1947 forints. Thus, investments and inventory increases amounted to 10.4 billion forints (roughly 886 million dollars) and nearly) percent of the national income in 1951 compared with only 2.85 billion forints (about 242 million dollars) and 15 percent of the national income in 1947/48.

Revisions of the plan also gave an ever increasing share of investments to heavy industries at the expense of consumer goods industries and of agriculture. The share of heavy industry in total investments increased from 18. 6 percent in 1938 to 32 percent in 1947/48, 40.5 percent in 1950 and 48 percent in 1951; and to this must be added hidden investments listed for propaganda purposes as housing, and other indirect expenditures, such as the expansion of the transportation system. By contrast the consumer goods industry's share in new investments declined constantly from 9.2 percent in 1938 to 3.6 percent in 1951.

Most actual production data is not available, or is highly controversial. Output data for 1952 claimed or calculated from officially released percentage increase figures are as follows: coal "more than" 18 million tons, steel 1.4 million tons, electric energy 3.7 billion kilowatt-hours. The 1954 production goals call for 27.5 million tons of coal (mostly lignite), 2.2 million tons of steel, and 6.05 billion kilowatt-hours of electric energy.

Nothing was said in the plans about the crude oil or the refining industries beyond general statements to the effect that they will be greatly expanded.

It appears that after the dismal failure to reach the crude production targets of the Three-Year Plan, long-range plans were drawn up only in terms of explora-

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tions to be made and number of meters to be drilled. These plans remain communist state secrets, but it is evident from a wealth of private reports as well as scattered official pronouncements that geological and geophysical explorations are being carried out at a scale hitherto unknown in Hungary. The 1953 drilling plan, as an example, calls for 263,000 meters (852,800 feet) of new wells, or more than five times the MAORT average in the years 1937-1945.

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Crude production in 1950 remained unchanged at the 1949 level of 490,000 tons (3,724,000 barrels) and fell to 475,000 tons (3,610,000 barrels) in 1951. The old Zala fields continued to decline, a loss which was not quite made up by the production of newly discovered fields. The year 1952 appears to have been a turning point in crude production. At least one important new field began producing north of the old Zala fields, and there were reports of scattered production elsewhere in Transdanubia and in northeastern Hungary. Production rose to 560,000 tons (4,250,000 barrels) overfulfilling the yearly plan, and according to official statements was held back only by transportation bottlenecks. The 1953 plan is 25 percent over the 1952 output or slightly over 700,000 tons (5,320,000 barrels). According to official reports in the first quarter of 1953 the plan was fulfilled.

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Knowledge of the refining industry is much less complete than that of crude production. It is known, however, that the industry as a whole has been considerably expanded. A large new refinery was reportedly built in southwestern Hungary at Nagykanizsa to process much of the output of the nearby Zala fields. The modernized and expanded old plants along the Danube at Szöny and Almásfüzitö as well as those in the Budapest area are refining primarily imported Austrian crude.

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Total refining capacity as of 1952 is estimated as 2,500,000 tons (19,000,000 barrels) annually, but a high percentage of this capacity is equipped only for fractional distillation. Although no reliable direct information is available, it would appear that the refineries operated

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382 433 considerably below capacity throughout the whole 1950-1952 period.

Imports, Exports, and Consumption

439 382 Before oil was discovered and exploited in Transdanubia, Hungary met her oil needs by imports.

[373] Widespread demand for oil began in Hungary with the introduction of kerosene lamps around 1862. Until 1900 Russia, the United States, and Romania were the main sources of oil imports. Imports of refined products, almost exclusively kerosene, reached 100,000 tons annually during the 1880's for the whole Austro-Hungarian Empire, of which Hungary accounted for about 25,000 to 30,000 tons.

When some small refineries began operating in Hungary a duty was placed on kerosene. From 1885 on, considerable quantities of "synthetic crude" (kerosene mixed with crude oil) were imported from Russia and later from Romania to avoid this duty.

Galicia, then part of the Dual Monarchy, replaced American and Russian sources when oil was discovered there at the turn of the century. Shipping costs were lower and the oil was not subject to the import duty. However, some oil continued to go from Romania to nearby Hungarian Transylvania.

Meanwhile different oil products came into demand. Pitch and asphalt were produced from the asphalt-based Russian and Romanian crude. Paraffin from the paraffin-based Galician crude replaced beeswax and stearin in candles and became an important commercial product finding markets as distant as China. After 1900 some lamps burned lighter oil, and gasoline became a cleaning agent and a chemical solvent. Lamp kerosene, however, had to be free of gasoline, since its boiling point was fixed by law to prevent fires. Until well into the twentieth century gasoline was disposed of in flaring-pits as an undesirable by-product of kerosene refining.

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desirable by-product of kerosene refining.

After 1910, as electric lighting replaced kerosene lamps, automobiles came into use and the diesel engine was invented; and gasoline and heavier motor and lubricating oils joined kerosene as important oil products. Hungarian gasoline consumption remained low, however. To reduce imports it was mixed with alcohol from surplus potatoes. While few homes were oil-heated, industry consumed increasing quantities of oil.

The volume of total crude refined in Hungary was 117,000 tons in 1902, and reached 396,000 tons in 1913, the peak pre-World War I year. Of the total, 90 percent came from Galicia, about 7 percent was imported from Romania, while the remaining 3 percent came from scattered domestic production and other sources.

After World War I Galicia went to Poland. The oil fields there were partly exhausted and partly destroyed and production decreased considerably. At first imports from the Soviet Union replaced the Galician crude to some extent. Specialized products, especially lubricating oils, were imported from Germany and from the United States. Beginning in 1914 Hungary had refined lubricating oils from the Egbell (Gbely) crude but this field went to Czechoslovakia after the war.

In 1926 an agreement was reached with Romania concerning the import of "synthetic crude," now a gasoline-crude mixture, and from then on until 1940 that country became practically the sole source of Hungarian imports. Total Hungarian imports in 1926 amounted to 61,600 tons of synthetic crude and 73,600 tons of refined products, or a total of 135,200 tons. This was a sharp increase over the previous year and must be contrasted with total imports of only 17,200 tons in 1920 and an average of 67,000 tons for the years 1921-1925. Imports continued to increase and reached their peak in 1936 with 238,300 tons of Romanian synthetic crude and 21,800 tons of refined products from Romania and Germany, a total of 260,100 tons or almost twice the 1926 figure.

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The following year[1] oil was discovered in Transdanubia and by 1941 Hungary had completed the transition from an oil importing to an oil exporting nation. The relevant data for these important transition years are found in Table VIII.[2]

There are no precise export-import data available for the chaotic years 1944 and 1945, when Hungary was a battlefield and the oil fields were under first German then Red Army supervision. It is known, however, that crude [438] production in 1944 amounted to 810,000 tons of which some 500,000 tons were exported to Germany or were used up by the German Army in Hungary. Similarly, of the 1945 production of 656,000 tons the Germans took about 100,000 tons while the Red Army seized over 400,000 tons.

Oil exports played a major part in Hungary's reviving postwar foreign trade. In contrast to the war years, when the bulk of the Hungarian oil was shipped westward to Germany, the postwar exports went east to the Soviet Union, with smaller quantities being taken by Yugoslavia, Czechoslovakia, and Poland. Exports amounted to 340,000 tons in 1946 and to 251,500 tons in 1947. Of these 135,000 tons and 25,000 tons respectively were on the war reparations account.

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Beginning in September 1948 statistical secrecy was imposed on export-import figures by the communist government. Despite the complete lack of any official information it has been possible to estimate the "exportable surplus" of oil for the five years following 1947. This method involves the determination of the domestic crude production and the calculation of the domestic consumption from such secondary information as the number of trucks and cars, the level of industrial activity, and other contributing factors. By subtracting the domestic consumption from the domestic production we obtain the "exportable surplus" quantities. It must be remembered, of course, that these data, however carefully arrived at by calculations and estimations, are approximations and are used here only due to the lack of more accurate information.

1 [i.e., in 1937 - Analyst] 18

2 [See page 89 - Analyst]

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[428] 382 Domestic consumption in 1946 was the same as prewar—260,000 tons. It remained relatively stationary at 265,000 tons during the Three-Year Plan years of 1947, [433] 439 1948, and 1949 and then began to rise again. Domestic consumption was calculated as 310,000 tons in 1950, 410,000 tons in 1951, and 460,000 tons in 1952. Subtracting these figures from the carefully established production figures of 475,000 tons for 1948; 490,000 tons for 1949; 490,000 tons for 1950; 475,000 tons for 1951; and 560,000 tons in 1952 we obtain the following exportable surplus figures: 210,000 tons in 1948; 225,000 tons in 1949; 180,000 tons in 1950; 65,000 tons in 1951; and 100,000 tons in 1952. While these figures must be treated with caution, they represent the only realistic appraisal of the export-import situation because of the absence of official data and because of the peculiar position of Hungary as a less and less distinguishable part of the over-all Soviet economic system. It must be kept in mind that the Soviet Union receives a part of the oil as its share of the Hungarian-Soviet Oil Company's production. The Soviet-owned Hungarian oil, if and when exported, is not listed under Hungarian exports by the Hungarian communist authorities. To confuse matters more, since 1949 Hungarian refineries have been processing ever increasing quantities of Austrian crude; the resulting refined products being shipped to the Soviet forces in Germany and to Czechoslovakia, Poland and western Romania. It is very doubtful whether these transactions are still being officially treated as Hungarian imports of crude and as Hungarian exports of refined products. They are more likely simple transactions of the Soviet Oil Combinat in Austria (the crude producer), the Soviet-controlled and partly Soviet-owned Maszovol refineries in Hungary (the refining agent) and the Red Army in East Germany and different Polish, Czechoslovak, and Romanian industrial trust and distribution agencies (the consumers). One can really no longer refer to Hungarian exports and imports.

In brief, Hungary was an oil-importing nation until the eve of World War II, when the Zala fields were discovered in 1937, and further discoveries made in 1940 and 1941. As domestic production increased imports fell off and in 1941 Hungary became an exporting nation.

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Small "pocket" refineries using imported Romanian crude began operating in Transylvania in the 1880's and by 1900 they numbered twenty-two. The first larger fineries were also established in the same period at Fiume (now Rijeka, Yugoslavia) and at Budapest. A third one was built in 1895 in Pozsony (now Bratislava, Czechoslovakia). The Vacuum Oil Company opened a refinery at Almásfüzitő on the Danube in 1905 and another the following year in Csepel, south of Budapest. Meanwhile with the development of the Galician oil fields small refineries sprang up all over northern Hungary, in a territory subsequently lost to Czechoslovakia, and Romania. They were at Žilina (Zsolna), Turčiansky Svätý Martin (Turócszentmárton), Kasmarok (Késmárk), Medzilaborca (Mezőlaborc), Strazke (Ormező) in Slovakia; Mukačevo (Munkács) in Ruthenia; and at Satu-Mare (Szatmárnémeti), Dej (Dés), Târgu-Mureş (Marosvásárhely), and Braşov (Brassó, now Orsul Stalin) in Transylvania. Another refinery was at Kisvárda within Hungary's post-1920 boundaries.

Due to the paraffin base of the Galician crude most of these refineries had to build dewaxing plants.

Territorial losses following World War I reduced Hungary's total refining capacity from 400,000 tons (3,000,000 barrels) in 1914 to less than 200,000 tons (1,500,000 barrels) in 1920, but as several new refineries were built between the two wars, and others were expanded, Hungary's refining capacity surpassed the 400,000-ton (3,000,000 barrels) mark once more by 1940.

The Hungarian refining industry was given a tremendous impetus by the wartime construction program,

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382 which more than tripled capacity by 1944. In the last year of the war it was almost eliminated as an economic factor, but the first phase of reconstruction began shortly after the war was over. Table V gives the Hungarian refinery capacity for the years 1918-1952.

The following operation-by-operation survey as of 1947 gives a more detailed picture of the refining industry throughout this period.

Vacuum Oil Company. Plants built in 1905 at Almásfüzitő and 1906 at Csepel. The equipment consists of single-flash topping units and vacuum distilling towers. Light distillates are dewaxed by freezing and straining; heavy distillates by centrifuge. Lubricating oil is distilled by acid-treated centrifuges. Annual capacity in 1941 was about 600,000 barrels. A second pipe still and a lubricating oil plant which dewaxes by benzine precipitation increased capacity to 2,000,000 barrels by 1944. Storage capacity was 88,000 barrels of crude and 100,000 barrels of refined products. Construction of high vacuum installation was started in Vacuum's plants in 1943.

Air raids reduced capacity to 1,100,000 barrels yearly. In 1947 the single-flash topping unit and the vacuum distilling tower were in operation. The plants dewax medium and heavy crude and produce kerosene.

Shell-Kőolaj R.T. (Shell Petroleum Company). Refinery built at Csepel in 1922; owned by the Shell-Oil Company, London; equipped with Foster-Wheeler single-flash topping unit and Trumble vacuum distilling tower. Oil is dewaxed by refrigeration of light paraffin distillates; lubricating oil is refined by acidization in agitators. Capacity was about 1,000,000 barrels in 1941. A dewaxing plant and a Barysol lubricating plant were added, increasing capacity to 1,800,000 barrels by 1944. Storage capacity was 40,000 barrels of crude and 76,000 barrels finished products.

The Barysol plant was demolished in air raids. The single-flash topping unit and vacuum distilling tower

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were in operation in 1947. The paraffin works (which is located in a suburb north of Budapest) suffered no damage. Capacity was estimated at 1,350,000 barrels yearly in 1947.

Magyar Olaj és Vegylipar R.T. Private refinery built in Budapest in 1922, consisting of simple fire still with bubble column. Refining capacity increased during the war from 350,000 barrels a year in 1941 to about 700,000 in 1944. Storage capacity was 13,600 barrels crude and 1,900 refined products. Paraffin and crude refineries completely destroyed in air raids; only distilling operations resumed, with an annual capacity of about 220,000 barrels.

Nyirbogdányi Petroleumgyár R.T. This refinery, built in 1923 at Nyirbogdány, southwest of Kisvárda, has a low-capacity single-flash topping unit and vacuum distilling tower. Freezing dewaxes the oil and acid-treated agitators refine it. Capacity was 180,000 barrels in 1941 and 540,000 in 1944. Minor war damages were quickly repaired.

Fanto Egyesült Ásványolajgyárak R.T. This company has two plants at Budapest and a third at Győrvár. They have old, horizontal stills. Refining capacity was 270,000 barrels yearly in 1941 and 540,000 in 1944. Air raids destroyed one of the Budapest plants. The other two "pocket" refineries are intact. Their 1947 capacity was about 100,000 barrels.

Szöregi Petroleumgyár R.T. This small refinery with fire still and bubble column was built in 1932 at Szöreg. Capacity was 90,000 barrels yearly in 1941 and 150,000 in 1944. It escaped war damage.

Péti Nitrogénművek R.T. In 1939 the government built Hungary's only really modern refinery and chemical plant in Pét, at the northeastern end of Lake Balaton. Its Foster-Wheeler atmospheric distilling tower was still out of operation because of war damage in 1947. The Dubbs selective cracking unit had been repaired, and the Barysol

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382 solvent refinery plant was under reconstruction in that year. Peak capacity of 1,350,000 barrels was reached in 1944. Capacity fell to 1,100,000 barrels thereafter but has probably recovered since. There are storage facilities for 23,300 barrels of crude and 126,000 barrels of finished products.

Magyar Olajművek R.T. The government constructed another modern refinery at Szőny, near Almásfüzitő, in 1943. It was originally planned to have a yearly capacity of 5,500,000 barrels—in which case it would have been able to refine all crude produced in Hungary. Later these plans were considerably reduced and it was completed with a capacity of 2,250,000 barrels on 14 June 1944. That same day it was damaged by an air raid. In 1947 only the single-flash topping unit was functioning. The vacuum tower, solvent extraction plant, and other units (all were designed by a Hungarian chemist, Dr. Kell, who perfected a process for simultaneously removing asphalt and paraffin from oil) had been destroyed. It could therefore function only as a primer distillation plant with a 1,800,000 barrel capacity. There was storage for 32,000 barrels crude and 126,000 barrels refined. In 1946 this refinery became the property of Maszovol, the Hungarian-Soviet Oil Company.

During the war Hungary also had the use of five small refineries in territories that were temporarily recovered but which were lost again with the territories in which they were located at the end of World War II. These refineries and the number of barrels of oil they could refine yearly were: in southern Slovakia, one at Lengenye-Mihályi, 90,000; in Ruthenia, one at Mukačevo, 200,000, and another at Čop, 50,000; and in Transylvania, one at Dej, 190,000, and a second at Targu-Mures, 180,000.

382 433 As can be seen from the above list the total Hungarian refining capacity declined from 1,300,000 tons (over 10,000,000 barrels) annually in mid-1944 to less than 100,000 tons (760,000 barrels) one year later. While the refining capacity in 1944 greatly exceeded domestic production of crude it fell to about one-seventh of it in 1945.

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By 1947 capacity recovered to approximately 830,000 tons (6,300,000 barrels) and it was somewhat optimistically given as 100,000 tons monthly or 1,200,000 tons (9,100,000 barrels) annually in early 1948.

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The relatively rapidly restored refining capacity, however, remained largely unused because of Hungary's inability to import Romanian crude, which went directly to the Soviet Union. Continued enforced crude exports from a diminishing domestic production further reduced the crude supplies available to the refineries. Consequently the refineries operated at only 30 to 50 percent of rated capacity in the 1946-1948 period.

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If we consider that scarce building material and skilled manpower were devoted to reconstruction of the refineries, which then were left largely unused, it becomes apparent that rather gross misplanning took place in this sector of the Hungarian economy. It is evident that the postwar planners greatly overestimated the prospective future domestic crude production and expected large additional crude imports, instead of which their Soviet economic superiors forced them to export crude.

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Despite its relatively large capacity, the Hungarian refining industry was technically outdated even before the war. The largest, newest, and most modern plants, mainly built within the framework of the Five-Year Plan of 1938, were the ones most thoroughly destroyed during the war. These plants and the more complicated parts of the older plants were the ones last rebuilt or not rebuilt at all. A close study of the refinery survey given above will reveal that as of the end of 1947 the Hungarian refining industry was still quite inferior from a technical point of view. With the exception of a small cracking unit at the Pét plant none of the installations were able to change the molecular composition of the hydrocarbons they processed. Nor were they able to produce the great variety of high grade petroleum products now manufactured in the United States or Western Europe. In fact, they were limited to simple fractional distillation and little else.

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Knowledge of the last three years' developments is admittedly insufficient. However, from scattered official pronouncements and a large number of private reports (the accuracy and reliability of none of which are known) the following picture emerges:

Since the complete consolidation of Soviet rule in Eastern Europe in 1948, the Hungarian refining industry has been reoriented to fit into the overall Soviet economic pattern. Capacity was further increased and reached an estimated 1,500,000 tons (15,200,000 barrels) in 1949; and perhaps 2,000,000 tons (19,000,000 barrels) by the end of 1952. A new refinery was built at Nagykanizsa (and/or at Pecs and Zalaegerszeg according to other reports) in southwestern Hungary. It is probably designed to use most of the production of the Zala fields, which averaged about 4,000,000 barrels during the last ten years. The remaining refineries, most of which are located along the Danube at Szöny, Almásfüzitö, the Budapest area, and Paks have switched to crude from Zistersdorf and other newly discovered fields in the Vienna Basin in Austria (the Austrian crude production was estimated as being between 2,000,000 and 3,000,000 tons or 15,200,000 and 22,800,000 barrels). The crude is transported one to two hundred miles to the refineries by Danube barges, while the refined products are transported back to Bratislava the same way; from there they are distributed by rail to Eastern Germany, Czechoslovakia, and even Poland.

The newly built plants usually include catalytic cracking units but the refining industry seems still unable to meet the country's increased lubricating oil needs.

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TABLE I

Oil Production, 1937-1947

Year	Transdanubia (MAORT)	Eastern Hungary (Hungarian Govt.)	Total Hungary
	(in metric tons)		
1937	1,866	1,029	2,895
1938	37,254	5,559	42,813
1939	141,849	1,944	143,791
1940	249,590	827	250,417
1941	421,660	478	422,138
1942	665,201	430	665,631
1943	837,711	357	838,068
1944	809,970	192	810,162
1945	655,568	209	655,777
1946	674,539	233	674,772
1947	569,433	200	569,633

Source: Simon Papp, "Nyersolaj és földgáz Magyarországon," Magyar Technika (Budapest), I, No. 6 (October, 1946), 206.

Note: The following sources are in general agreement with Papp: Mihály Freund, "A Magyar ásványolajipar az elmult száz év alatt," Magyar Technika, III, No. 3 (1948), 90. Hungarian Statistical Bureau release of February 1949, which is coincident with data published in the Magyar Statisztikai Zsebkönyv, 1947, p. 103; and 1948, p. 135, for the years 1938, 1945, and 1946. The Hungarian Statistical Bureau figures differ only for 1946 (13,611 tons higher) and 1947 (211 tons higher).

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TABLE II

Comparative Data on Oil Production, 1947-1952

Source	1947	1948	1949	1950	1951	1952
	(in thousand metric tons, figures rounded)					
World Oil	570	480	499	455	592[a]	
World Oil (revised figures)	570	484	499	487	460	443[a]
U.S. Bureau of Mines		480	499			
United Nations I	570	484	503	530	500	
United Nations II		480	510	550		
Hungarian Bulletin		500	518			
MESC[b] associate	570.86	471	457	455	470	560
Private Source I			500	500		
Private Source II					485	
Rosu				461	450	
Teleki			502.3	461	450	
Wszelaki				492		
Recommended by MESC	570	475	490	490	475	560

[a] World Oil preliminary figures
[b] Mid-European Studies Center

Note: Conversions have been made at the rate of 7.6 barrels to one metric ton; corresponding to 1947 Hungarian average of 7.6029 barrels to one metric ton.

TABLE II, Note (cont.):

The sources referred to may have used ratios of 7.5 7.66, or 7.7 barrels to the metric ton leading to minor discrepancies. No current information is available as to the specific gravity of Hungarian oil; this may lead to additional discrepancies, but the margin of error is negligible and does not exceed 1 percent. (Last available ratios, 1946-47: 7.5436 barrels per ton at Lispe; 7.7140 barrels per ton at Lovászi; and 7.2173 barrels per ton at Hahót.)

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Sources:

World Oil, CXXXV, No. 2 (15 July 1952), 64: 1947 - 4,330,000 bbls.; 1948 - 3,647,000 bbls.; 1949 - 3,791,000 bbls.; 1950 - 3,460,000 bbls.; 1951 - 4,500,000 bbls. (preliminary figures).

World Oil, CXXXVI, No. 3 (15 February 1953), 276. Revised figures: 1947 - 4,330,000 bbls.; 1948 - 3,677,000 bbls.; 1949 - 3,791,000 bbls.; 1950 - 3,700,000 bbls.; 1951 - 3,500,000 bbls.; 1952 - 3,367,000 bbls. (preliminary figures).

Mineral Yearbook, 1949 (Washington, D.C.: United States Bureau of Mines, 1950), p. 1615.

United Nations I: Statistical Yearbook 1952 (New York, 1952); estimates for 1948-1951 by Petroleum Press Service, London.

United Nations II: Research and Planning Division, Economic Commission for Europe, Economic Survey of Europe in 1950 (Geneva, 1951), p. 172.

Hungarian Bulletin (Budapest), No. 69 (11 March 1950), p. 3, states that the 1949 crude oil production was 1168.9 percent of the 1938 output; the 1949 production was 103.6 percent of that of 1948.

Private source I.

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TABLE II, Sources (cont.):

Private source II, as quoted in Report No. VII (51), 24 October 1951, Hungarian Radio and Information Center, National Committee for a Free Europe, New York, states: "In the first half of 1951 Hungary produced crude at the rate of 10,100 barrels daily reaching only 88 percent of the plan. Plans call for 1,500 barrels more daily by 1952." Yearly rate based on the first half year's production, which is probably a little low because of better performance in the second half.

George C. Rosu, "Iron Curtain Report," Oil and Gas Journal, 2 June and 9 June 1952.

Géza Teleki, "The Mineral Raw Materials of Hungary," manuscript, Table: Petroleum (New York: Mid-European Studies Center of the National Committee for a Free Europe).

Jan H. Wszelaki, "Petroleum for Power in Red Europe," World Oil, CXXXIV, No. 6 (May, 1952), 254. "Accredited American sources with access to much special information" state that Hungary's oil production was 3,739,000 barrels in 1950.

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TABLE III

Planned Oil Production, 1947-1953

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Source	1947/48	1948/49	1949/50	1951	1952	1953
	(in thousand metric tons)					
I	540	600	660			
II				551	557	
III					500	575
IV						703

Sources: I. 1947/48-L.D. Schweng, Economic Planning in Hungary since 1938. New York: Mid-European Studies Center of the National Committee for a Free Europe, 1951), p. 24.
1948/49: MESC staff.
1949/50: Schweng, op. cit.; United Nations, Research and Planning Division, Economic Commission for Europe, A Survey of the Economic Situation and Prospects of Europe (Geneva, 1948), p. 132.

II. Private source as quoted in Report No. VII (51), 24 October 1951. Hungarian Radio Information Center, National Committee for a Free Europe, New York.

III. Private source.

IV. 1953: MESC estimate, based on statement of Mátyás Rákosi in Szabad Nép, 16 December 1952, p. 2 (see above pp. 68-69).

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TABLE V

Total Annual Capacity of Crude Oil Refineries and Annual Capacity of Individual Refineries

A. Total Annual Capacity

Year	Million Barrels
1918	3.0
1920	1.5[a]
1940/41	3.2[b]
Spring 1944	10.0[c]
1946/47	6.36
1948	9.1
1949	12.2
1952	20.0

[a]Decrease was due to loss of territory
[b]Including 0.71 in recovered areas
[c]Including 0.71 in recovered areas

B. Annual Capacity of Individual Refineries

Refinery	1940/41	Spring 1944	1946/47
	(in thousand barrels)		
Vacuum Oil Co.	600	2,000	1,100
Shell Kőolaj R.T.	1,000	1,800	1,350
Magyar Olaj és V.R.T.	350	700	220
Nyirbogdányi Petroleumgyár R.T.	180	540	540
Fanto Egy. Ásványolajgyárak R.T.	270	540	100
Szöregi Petroleumgyár R.T.	90	150	150
Péti Nitrogénmüvek R.T.		1,350	1,100
Magyar Olajmüvek (Szöny)		2,250	1,800
3 in Czechoslovak area	340	340	a
2 in Romanian area	370	370	a

[a]Area lost by Hungary after World War II.

Sources: A. Figures estimated by MESC staff.
B. Figures compiled by MESC staff from authoritative private sources.

TABLE VI

382 Civilian Consumption of Petroleum Products, 1940-1943[a]

Product	1940	1941	1942	1943
	(in metric tons)			
Gasoline	84,000	95,800	74,000	88,000
Kerosene	85,000	70,600	84,000	78,000
Diesel oil	37,000	48,100	52,000	60,000
Fuel oil	30,000	37,700	24,000	33,000
Lubricating oil	23,000	30,000	33,500	24,000
Asphalt and pitch	12,000	24,500	26,800	24,000
Paraffin wax	3,000	4,500	4,700	4,700
Total	274,000	311,200	299,000	320,700

[a]During this period civilian products were rationed.

Private source.

TABLE VII

315 Natural Gas Production of the Zala Fields, 1937-1945

Year	Total Production	Wasted	Returned to Formation	Used by the Company	Sold
1937	2,315	1,396	—	919	—
1938	14,999	10,045	—	4,955	—
1939	46,310	35,842	83	10,396	—
1940	75,882	43,411	6,884	25,587	—
1941	136,597	101,399	2,793	32,405	—
1942	212,925	137,570	31,529	43,827	—
1943	266,109	142,187	66,199	56,784	939
1944	310,722	166,273	70,646	71,532	2,271
1945	363,456	218,204	70,697	70,862	3,693

Note: Symbol — equals none.

Source: Simon Papp, "Nyersolajkutatás és termelés Magyarországon," Magyar Kémikusok Lapja (Budapest), I, No. 6 (25 November 1946), 91.

APPENDIX

The Great New Tasks of Our Petroleum Industry

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Note: This article was written by an important Hungarian government official and appeared in the Budapest daily Szabad Nép (31 January 1952, p. 6), the central organ of the Hungarian Communist Party. It represents the official communist version of the Hungarian oil industry's past, throws some light on its present status and problems, and gives some indication of its future development. The article is reproduced below in its entirety.

000 One of the most important raw materials of our economy is petroleum. Oil is needed to keep the thousands upon thousands of our industrial machines humming; oil is needed so that the tractors of our machine stations can help our working peasantry; oil is needed for the running of cars, trucks, and buses; oil and natural gas are also two of the most important basic raw materials of the chemical industry.

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471 Oil is not an old branch of industry in Hungary. Before the 1930's we had no oil mining. In 1933 the Horthy regime with its infamous Law No. XIX illegally transferred the right of oil exploration and production in Transdanubia to Standard Oil, an American company. This was a good deal for the American capitalists; the government of the gentlemen's regime gave them preferential treatment and opportunities for predatory exploitation. Zala County, rich in oil resources but economically and culturally backward was an especially favorable area for reaping extra profits. During the Second World War, Hitler and the American stockholders were in happy partnership. Oil production for the benefit of the fascist war machine was constantly

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